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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,145	09/15/2003	His Majesty King Bhumibol Adulyadej	Royal 001-2003.usa	8737

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The Office of His Majesty's Principal
Private Secretary
BANGKOK, 10200
THAILAND

EXAMINER	
HOGAN, JAMES SEAN	
ART UNIT	PAPER NUMBER
3752	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/662,145	BHUMIBOL ADULYADEJ, HIS MAJESTY KING	
	Examiner	Art Unit	
	James S Hogan	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 September 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *15 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *09/15/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112, second paragraph

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-12 and 17 are rejected under 35 U.S.C. 112, second paragraph, are being indefinite and/or incomplete. Claim 1 is indefinite because a process is said to have been claimed, but a sequence of steps has not been set forth. Instead, applicant has listed four apparently independent process steps. In addition, claim 17 is rejected under 35 U.S.C. 112, second paragraph as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the definition of the rainmaking technique to which the cloud seeding can be performed at the locations within a cloud that are specified. The informal definitions of the techniques (e.g. "fattening") do not define a process in dependent form for this claim..

Claim Rejections - 35 USC § 112, first paragraph

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 13 – 16 and 19 are rejected under 35 U.S.C. 101 because the claimed method of "moving" clouds appears to be inoperative and therefore lacks utility.

There is no well-established utility of these claims. The disclosed method of "moving" clouds asserts that clouds can be moved against any prevailing atmospheric conditions where winds caused by the heating and cooling of air, as well as the Earth rotation, can be overcome.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Applicant fails to explain and describe in detail a reasonable delivery system for the various chemical agents that are purported to assist in the formation of clouds, and their subsequent delivery of precipitation. The methods disclosed bring into account atmospheric heights that are generally associated with trans-oceanic commercial flights, but do not take into account prevailing existing winds when factored in with the velocity of the delivery system. By this account, the delivery of the agents can therefore not be targeted by one of ordinary skill in the art.

Claims 13 – 16 and 19 further rejected under 35 U.S.C. 112, first paragraph, because the invention of claims 13-16 and claim 19 is not supported by either a specific

and substantial asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-5,9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montmory in view of U.S. Patent No. 6,056,203 to Fukata.

Claim 1 claims a process of rainmaking comprising the steps of triggering, fattening, attacking and enhancing.

Montmory ('271) discloses a process of rainmaking (i.e., cloud seeding), including "triggering," "fattening" and "attacking". The triggering of Montmory is the use of a salt, and "fattening" is the use of dimethyl sulfoxide (DMSO). Furthermore, Montmory discloses the step of "attacking" (that is, the use of a device, as described in column 4, lines 32-59).

Fukata ('203) teaches to enhance the volume of rainfall by the use of silver iodide flairs seeded into the top of a cloud (at the part of the cloud where the temperature is between 0°C and –15°C). Fukata ('203) discloses that ice crystals formed by the use of sliver iodide flares will be affected by the effect of a cloud becoming more transparent and will change to liquid precipitation. Therefore it would have been obvious to one

skilled in the art at the time the invention was made to have further modified the cloud seeding and rainmaking technique of Montmory to include a means to enhance the volume of rainfall in order to promote rainfall onto a land mass as taught by Fukata.

Claim 2, further limits claim 1 to provide that the cloud condensation nuclei are dispersed into a volume of air at a level of cloud formation, or at other levels, at a distance upwind of the target area. Montmory discloses to seed at the level of cloud formulation. As to claim 3, Montmory discloses the use of sodium chloride (column 4, line 19) as a hygroscopic chemical.

Regarding claims 4 and 5, the process of cloud promoting referred to by the Applicant as "fattening" where exothermic-hygroscopic chemicals dispersed into the updraft portion of a cloud above the cloud base is taught by Montmory ('271). Calcium chloride is disclosed (col. 4 line 20) as a suitable ("fattening") agent to be dispersed at any level within a cloud (Col.4, line 51-60).

Claims 6, 7 11, 12 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montmory in view of U.S. Patent No. 6,056,203 to Fukata and further in view of U.S Patent No. 5,357,865 to Mather

Regarding claims 6, and 7 the process of initiating rainfall referred to by the Applicant as "attacking" is taught by the combination of the procedures taught by Mather ('865) and Knollenberg ('992). As per claim 6, Mather ('865) teaches the use of sodium chloride as a rain initiation agent used for cloud seeding (claim 1) upwind and above a cloud. Knollenberg teaches the use of urea in a method for producing rain or snow by

applying urea to the area of a cloud where temperatures are known to be between 6°C and –15°C. It can be argued that at the base of any cloud is where these temperatures can be found, as the internal temperature of a cloud decreases with respect to higher elevation. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have simultaneously combined the known cloud seeding techniques of Mather (865) and Knollenberg ('992) to insure the eruption of rain.

Regarding claim 11, 12, and 18 an additional process of initiating rainfall referred to by the Applicant as "attacking" is taught by the combination of the procedures taught by Mather ('865), Knollenberg ('992) and Fukata ('203). The rejection of claims 6-7 above outline the use of sodium chloride and urea as cloud seeding agents. The rejection of claims 9-10 above outline the use of carbon dioxide as an enhancing agent. Fukata ('203) teaches the use of silver iodide flairs seeded into the top of a cloud (at the part of the cloud where the temperature is between 0°C and –15°C) (see claim 1). The technique of Fukata ('203) also proclaims that ice crystals formed by the use of sliver iodide flares will be affected by the effect of a cloud becoming more transparent and therefore will change to liquid precipitation. Therefore it would have been obvious to one skilled in the art at the time the invention was made to have combined the various cloud seeding and rainmaking techniques in order to promote rainfall onto a land mass

Claim 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montmory in view of U.S. Patent No. 6,056,203 to Fukata, and further in view of U.S. Patent No. 5,628,455 to Fukata

Regarding claims 9-10, the process of enhancing rainfall onto the ground, referred to by the Applicant as "enhancing" is taught by Fukuta ('455). Fukuta ('455) teaches the dispersion of super-cool fog by releasing carbon dioxide (dry ice) from a ground vehicle. Then result is the formation of ice crystals that fall. It can be argued that the application of carbon dioxide from a vehicle in fog equates to releasing carbon dioxide at the base of a cloud. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have applied the precipitation forming technique of Fukata ('455) at the base of a cloud in a vehicle capable of reaching such altitudes in order to enhance rainfall.

Claims 8 is rejected under 35 U.S.C. 103(a) as being unpatentable in view of Montmory and Fukata ('203) and further in view of U.S. Patent No. 6,613,992 to Knollenberg.

As to claim 8, Knollenberg teaches the use of urea in a method for producing rain or snow. The urea is applied to the area of a cloud where temperatures are known to be between 6°C and –15°C. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have modified Montmory and Fukuta ('203) to also use urea as taught by Knollenberg ('992) to insure the eruption of rain.

Claim 13-16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,357,865 to Mather in view of U.S. Patent No. 4,362,271 to Montmory and further in view of U.S. Patent No. 3,659,785 to Nelson et al. and even further in view of U.S. Patent No. 6,613,992 to Knollenberg, and still even further in view

of U.S. Patent No. 5,628,455 to Fukata and yet still even further in view of U.S. Patent No. 6,056,203 to Fukata.

The rejections of claims 1-12 and 17-20 above address the techniques referred to by the Applicant as "triggering", "fattening", "attacking" and "enhancing" and will not be replicated here. The technique of relocating a cloud, referred to by the Applicant as "moving", is taught by Nelson et al. ('785). The dispersion of fog (i.e. a low cloud) is taught by Nelson et al using hydroscopic chemicals (Col. 1, line 9-17). Calcium chloride is named as a known exothermic hygroscopic chemical used for this purpose (Col. 2, line 30-34). As vapor pressure reduces, the fog becomes buoyant, and therefore rises. A prevailing wind would then move the cloud. Regarding claim16, in which the use of "fattening" and "attacking" are used, the rejections of claims 4-8 above address those techniques, and will not be replicated here. The resultant of those techniques, upwind of a target area will result in the movement of the enhanced cloud. Therefore, it would be obvious to one skilled in the art at the time the invention was made to have applied the effect of fog dispersion on a cloud in order to raise its elevation and subsequently move it.

Regarding claim 20, the use of calcium chloride (exothermic-hygroscopic), urea (endothermic-hygroscopic) and sodium chloride (hygroscopic) in any combination is taught in the rejections above. Therefore it would have been obvious to one skilled in the art at the time the invention was made to have combined the various cloud seeding and rainmaking techniques, in any combination, in order to promote rainfall onto a land mass.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Montmory in view of U.S. Patent No. 6,056,203 to Fukata and further in view of U.S. Patent No. 3,659,785 to Nelson et al.

Regarding claim 19, Nelson et al. discloses the use of seeding exothermic-hygroscopic chemicals, including calcium chloride as a known technique in dispersing fog, It would have been obvious to one skilled in the art at the time the invention was mad to have applied a known fog dispersion technique in order to clear a path within a cloud mass in order to provide a safe passage for other aircraft.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure is as follows:

U.S. Patent No. 3,429,507 to Jones, disclosing a weather making technique

U.S. Patent No. 3,694,372 to Anderson et al., disclosing a minute capsule manufacturing for cloud seeding.

U.S. Patent No. 3,748,278 to Kühne et al., disclosing agents having influence on the weather

U.S. Patent No. 6,315,213 to Cordani, disclosing a method of modifying weather

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James S Hogan whose telephone number is (571) 272-4902. The examiner can normally be reached on Mon-Fri, 7:00a-4:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin P Shaver can be reached on 571-272-4720. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JSH
06/14/2007

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